

AMENDMENTS

In The Claims

Please enter new claims 28-65:

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--28. (New) A method according to claim 1 or 2, wherein the mitochondrial disorder is selected from the group consisting of MELAS (mitochondrial encephalomyopathy with lactic acidemia and stroke-like episodes), MERRF (myoclonus, epilepsy, and myopathy with ragged red fibers), NARP/MILS (neurogenic muscular weakness, ataxia, retinitis pigmentosa/maternally inherited Leigh syndrome), LHON (Lebers hereditary optic neuropathy, "mitochondrial blindness"), KSS (Kearns-Sayre Syndrome), PMPS (Pearson Marrow-Pancreas Syndrome), CPEO (chronic progressive external ophthalmoplegia), Leigh syndrome, Alpers syndrome, multiple mtDNA deletion syndromes, mtDNA depletion syndromes, complex I deficiency, ND6 dystonia, complex II (SDH) deficiency, complex III deficiency, cytochrome C oxidase (COX, complex IV) deficiency, complex V deficiency, adenine nucleotide translocator (ANT) deficiency, and pyruvate dehydrogenase (PDH) deficiency.

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29. (New) A method for treating or preventing pathophysiological consequences of mitochondrial respiratory chain dysfunction in a mammal comprising administering to said mammal in need of such treatment or prevention an effective amount of a pyrimidine nucleotide.

30. (New) A method as in claim 29 wherein said respiratory chain dysfunction is caused by a mutation, deletion, or rearrangement of mitochondrial DNA.

31. (New) A method as in claim 29 wherein said respiratory chain dysfunction is a deficit in mitochondrial Complex I activity.

32. (New) A method as in claim 29 wherein said respiratory chain dysfunction is a deficit in mitochondrial Complex II activity.

33. (New) A method as in claim 29 wherein said respiratory chain dysfunction is a deficit in mitochondrial Complex III activity.

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34. (New) A method as in claim 29 wherein said respiratory chain dysfunction is a deficit in mitochondrial Complex IV activity.

35. (New) A method as in claim 29 wherein said respiratory chain dysfunction is a deficit in mitochondrial Complex V activity.

36. (New) A method as in claim 29 wherein said pyrimidine nucleotide is administered orally.

37. (New) A method as in claim 29 wherein said pathophysiological consequence of mitochondrial respiratory chain dysfunction is a congenital mitochondrial disease.

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38. (New) A method as in claim 37 wherein said congenital mitochondrial disease is selected from the group consisting of MELAS, LHON, MERRF, MNGIE, NARP, PEO, Leigh's Disease, and Kearns-Sayres Syndrome.

39. (New) A method as in claim 29 wherein said pathophysiological consequence of mitochondrial respiratory chain dysfunction is a neurodegenerative disease.

40. (New) A method as in claim 39 wherein said neurodegenerative disorder is Alzheimer's Disease.

41. (New) A method as in claim 39 wherein said neurodegenerative disorder is Parkinson's disease.

42. (New) A method as in claim 39 wherein said neurodegenerative disorder is Huntington's Disease.

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43. (New) A method as in claim 29 wherein said pathophysiological consequence of mitochondrial respiratory chain dysfunction is selected from the group consisting of renal tubular acidosis, dilating cardiomyopathy, steatohepatitis, hepatic failure, and lactic acidemia.

CS
44. (New) A method for treating developmental delay in cognitive, motor, language, executive function, or social skills in a mammal comprising administration of an effective amount of a pyrimidine nucleotide.

45. (New) A method as in claim 44 wherein said developmental delay is Attention Deficit/Hyperactivity Disorder.

46. (New) A method as in claim 44 wherein said developmental delay is autism.

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47. (New) A method for treating or preventing pathophysiological consequences of mitochondrial respiratory chain dysfunction in a mammal comprising administering to said mammal in need of such treatment or prevention an effective amount of a pyrimidine nucleotide precursor.

48. (New) A method as in claim 47 wherein said respiratory chain dysfunction is caused by a mutation, deletion, or rearrangement of mitochondrial DNA.

49. (New) A method as in claim 47 wherein said respiratory chain dysfunction is a deficit in mitochondrial Complex I activity.

50. (New) A method as in claim 47 wherein said respiratory chain dysfunction is a deficit in mitochondrial Complex II activity.

51. (New) A method as in claim 47 wherein said respiratory chain dysfunction is a deficit in mitochondrial Complex III activity.

52. (New) A method as in claim 47 wherein said respiratory chain dysfunction is a deficit in mitochondrial Complex IV activity.

53. (New) A method as in claim 47 wherein said respiratory chain dysfunction is a deficit in mitochondrial Complex V activity.

54. (New) A method as in claim 47 wherein said pyrimidine nucleotide precursor is selected from the group consisting of uridine, cytidine, an acyl derivative of uridine, an acyl derivative of cytidine, orotic acid, an alcohol ester of orotic acid, or a pharmaceutically acceptable salt thereof.

55. (New) A method as in claim 54 wherein said pyrimidine nucleotide precursor is administered orally.

56. (New) A method as in claim 47 wherein said pathophysiological consequence of mitochondrial respiratory chain dysfunction is a congenital mitochondrial disease.

57. (New) A method as in claim 56 wherein said congenital mitochondrial disease is selected from the group consisting of MELAS, LHON, MERRF, NARP, PEO, Leigh's Disease, and Kearns-Sayres Syndrome.

58. (New) A method as in claim 47 wherein said pathophysiological consequence of mitochondrial respiratory chain dysfunction is a neurodegenerative disease.

59. (New) A method as in claim 58 wherein said neurodegenerative disorder is Alzheimer's Disease.

60. (New) A method as in claim 58 wherein said neurodegenerative disorder is Parkinson's disease.

61. (New) A method as in claim 58 wherein said neurodegenerative disorder is Huntington's Disease.

62. (New) A method as in claim 47 wherein said pathophysiological consequence of mitochondrial respiratory chain dysfunction is selected from the group consisting of renal tubular acidosis, dilating cardiomyopathy, steatohepatitis, hepatic failure, and lactic acidemia.

63. (New) A method for treating developmental delay in cognitive, motor, language, executive function, or social skills in a mammal comprising administration of an effective amount of a pyrimidine nucleotide precursor.

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64. (New) A method as in claim 63 wherein said developmental delay is Attention Deficit/Hyperactivity Disorder.

65. (New) A method as in claim 63 wherein said developmental delay is autism.--
